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*****
;
;   PROGRAM ID:      DOUBLE D BIOS  (DDBIOS)
;
; *****
;
;   VERSION:        CP/M 2.2 8"  RELEASE 2A
;
; *****
;
;   PRESENTED BY:    JADE COMPUTER PRODUCTS
;                   4901 W. ROSECRANS BLVD.
;                   HAWTHORNE, CALIFORNIA
;                   90250,  U.S.A.
;
; ***** SK *****
;
; *****
;   DECLARE CP/M 2.2 SYSTEM SIZE
; *****

0014 =      CPM$NK  EQU      20      ;SYSTEM SIZE K BYTES.

; *****
;   DOUBLE D HARDWARE PARAMETER - SYSTEM PORT ADDRESS
; *****

0043 =      D$PORT  EQU      043H    ;DOUBLE D PORT ADDRESS.

; *****
;   SELECT NUMBER OF DISK DRIVES USED
; *****

0002 =      N$DRVS  EQU      2      ;SELECT 1 TO 4 DRIVES.

; *****
;   DISK OPERATING SYSTEM ADDRESSES.
; *****

0400 =      K$B      EQU      1024      ;1K BYTE SIZE.
5000 =      CPM$SZ   EQU      CPM$NK * K$B ;TOP SYSTEM ADDRESS.
0000 =      CPM$BS   EQU      CPM$SZ-(20*K$B) ;CP/M BIAS VALUE.

0100 =      TPA      EQU      0100H      ;ADDRESS OF TPA.
3400 =      CCP      EQU      CPM$BS+3400H ;ADDRESS OF CCP.
3C00 =      BDOS     EQU      CPM$BS+3C00H ;ADDRESS OF BDOS.
4A00 =      BIOS     EQU      CPM$BS+4A00H ;ADDRESS OF BIOS
C600 =      BIOS$R   EQU      1000H-BIOS  ;DDT OFFSET 1000H LOAD.
F000 =      BOOT     EQU      0F000H      ;BOOT FROM JUMP TABLE.
0003 =      IO$LOC   EQU      0003H      ;I/O BYTE LOCATION.
0004 =      DF$LOC   EQU      0004H      ;DRIVE ASSIGN LOCATION.

; *****
;   DOUBLE D SYSTEM PARAMETERS
; *****

0000 =      IOBYTE   EQU      00000000B   ;INITIAL IOBYTE VALUE.
0000 =      DF$DRV   EQU      0           ;INITIAL DEFAULT DRV.

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0080 = SEC$SZ EQU 0080H ;BYTES PER SECTOR.
0100 = FMT$SZ EQU 0100H ;FORMAT BUFF SIZE.

;*****
; DOUBLE D HARDWARE COMMANDS *
;*****

0001 = DC$SIN EQU 00000001B ;SWITCH DD BANK 0 INTO SYSTEM.
0001 = DC$MBO EQU 00000001B ;SELECT DOUBLE D BANK 0.
0003 = DC$MB1 EQU 00000011B ;SELECT DOUBLE D BANK 1.
0000 = DC$SOT EQU 00000000B ;SWITCH DD MEM OUT OF SYSTEM.
0002 = DC$INT EQU 00000010B ;ISSUE DD Z80A INTERRUPT.

;*****
; DISK CONTROLLER MODULE LINKAGE (DCM - VER 2.2) *
;*****

;***** ( DCM ADDRESSES DEFINED )*****

0370 = DD$CBT EQU 0370H ;COMMAND BLOCK (BANK 0).
0380 = DD$BUF EQU 0380H ;SECTOR BUFFER (BANK 0).
0300 = DD$FBF EQU 0300H ;FORMAT BUFFER (BANK 1).
03A0 = DD$DPB EQU 03A0H ;ID SEC DPB (BANK 0).
03B1 = DD$DDF EQU 03B1H ;ID SEC FLAGS (BANK 0).

;***** ( DCM COMMANDS )*****

0000 = DC$LOG EQU 000H ;LOG ON DISKETTE.
0001 = DC$RDS EQU 001H ;READ SECTOR.
0002 = DC$WRS EQU 002H ;WRITE SECTOR.
0003 = DC$FMT EQU 003H ;FORMAT TRACK.
0005 = DC$LST EQU 005H ;LIST CHARACTER.
0006 = DC$LCK EQU 006H ;LIST STATUS.

;*****
; ASSEMBLER DIRECTIVES *
;*****

4A00 ORG BIOS

;*****
; BIOS JUMP VECTOR TABLE *
;*****

4A00 C3364A JMP INIT ;COLD START ENTRY
4A03 C3424A JMP WARM ;RELOAD CCP/BDOS
4A06 C306F0 JMP CNS$CK ;GET CONSOLE STATUS
4A09 C309F0 JMP CNS$IN ;CONSOLE INPUT
4A0C C30CF0 JMP CNS$OT ;CONSOLE OUTPUT
4A0F C3B04A JMP LIST ;PRINTER OUTPUT
4A12 C3AF4A JMP PUNCH ;PUNCH OUTPUT
4A15 C3AC4A JMP READER ;READER INPUT
4A18 C3D04A JMP HOME ;HOME SELECTED DRIVE
4A1B C3D54A JMP SELDSK ;SELECT DISK DRIVE
4A1E C3F44A JMP SETTRK ;SET TRACK NUMBER
4A21 C3F94A JMP SETSEC ;SET SECTOR NUMBER
4A24 C3FE4A JMP SETDMA ;SET TRANSFER ADDRESS
4A27 C3044B JMP DISKRD ;PERFORM DISK READ
4A2A C3244B JMP DISKWR ;PERFORM DISK WRITE
4A2D C3C04A JMP LISTST ;RETURN LIST STAT

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4A30 C3514B      JMP      SECTRN      ;TRANSLATE SECTOR
4A33 C3614B      JMP      FORMAT     ;FORMAT A TRACK

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;*****
; COLD START ENTRY - ISSUE SIGN ON MESSAGE      *
;*****

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4A36 318000  INIT:   LXI      SP,0080H      ;SET UP STACK AREA.
4A39 21964C      LXI      H,MSG$SO        ;SIGN ON MSG ADDR.
4A3C CD4C4C      CALL     MSG$OT          ;ISSUE MESSAGE.
4A3F C3574A      JMP      CPM$LD          ;LOAD CCP/BDOS.

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;*****
; WARM BOOT ENTRY - LOADS CCP/BDOS - INITIALIZES      *
;*****

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;***** ( SET UP FOR CCP/BDOS LOAD )*****

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4A42 3A0300  WARM:   LDA      IO$LOC        ;GET I/O BYTE VALUE.
4A45 32914C      STA      IO$IMG        ;STORE I/O VALUE.
4A48 3A0400      LDA      DF$LOC        ;GET DEFAULT DRIVE.
4A4B FE02        CPI      N$DRVS        ;CHECK LEGAL DRIVE.
4A4D DA514A      JC       WRM$OK        ;IF LEGAL, GO OK.
4A50 AF         XRA      A              ;SET DRIVE TO A.
4A51 32924C  WRM$OK: STA      DF$IMG        ;STORE IN IMAGE.
4A54 318000      LXI      SP,0080H      ;SET UP STACK.
4A57 3E00        CPM$LD: MVI      A,DF$DRV  ;INIT DEFAULT DRIVE.
4A59 32594C      STA      BT$DRV        ;SELECT DISK.
4A5C 010034      LXI      B,CCP         ;CP/M CCP ADDRESS.
4A5F CDFE4A      CALL     SETDMA        ;SET DMA ADDR.
4A62 0E02        MVI      C,2          ;CCP 1ST SECTOR.
4A64 CDF94A      CALL     SETSEC        ;SET SECTOR NMBR.
4A67 0E01        MVI      C,1          ;CCP/BDOS TRACK.
4A69 CDF44A      CALL     SETTRK        ;SET TRACK NUMBER.

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;***** ( LOAD CCP/BDOS )*****

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4A6C CD044B  W$READ: CALL     DISKRD        ;READ ONE SECTOR.
4A6F A7        ANA      A              ;SET FLAGS.
4A70 C28C4A      JNZ      W$EROR        ;EXIT IF ERROR.
4A73 3A5B4C      LDA      BT$SEC        ;GET SECTOR NMBR.
4A76 FE2D        CPI      45           ;LAST SECTOR CHECK.
4A78 CA934A      JZ       W$ZRPG        ;GOTO ZERO PAGE SET.
4A7B 3C         INR      A              ;INCREMENT SECTOR.
4A7C 325B4C      STA      BT$SEC        ;STORE NEXT SECTOR.
4A7F 118000      LXI      D,SEC$SZ      ;GET SECTOR SIZE.
4A82 2A604C      LHLD     BT$DMA        ;GET TRANSFER ADDR.
4A85 19         DAD      D              ;CALCULATE NEW ADDR.
4A86 22604C      SHLD     BT$DMA        ;SET NEW ADDRESS.
4A89 C36C4A      JMP      W$READ        ;DO ANOTHER WARM READ.

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;***** ( READ ERROR DETECTED )*****

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4A8C 21CB4C  W$EROR: LXI      H,MSG$LE      ;GET ERROR MESSAGE.
4A8F CD4C4C      CALL     MSG$OT          ;ISSUE MESSAGE.
4A92 76        HLT                      ;OR GOTO MONITOR

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;***** ( INITIALIZE SYSTEM PARAMETERS )*****

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4A93 010800  W$ZRPG: LXI      B,8          ;BASE IMAGE SIZE.

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4A96 110000      LXI      D,0           ;BASE ADDRESS SET.
4A99 218E4C      LXI      H,BS$IMG     ;BASE IMAGE ADDR.
4A9C CD414C      CALL     BLOCK        ;BLOCK MOVE ROUTINE.
4A9F 218000      LXI      H,0080H      ;DEFAULT SECTOR BUFF.
4AA2 22604C      SHLD     BT$DMA       ;SET TRANSFER ADDRESS.

;***** ( JUMP TO CCP )*****

4AA5 3A0400      LDA      DF$LOC       ;GET CURRENT DSK NMBR.
4AA8 4F          MOV      C,A         ;SEND TO THE CCP.
4AA9 C30034      JMP      CCP         ;JUMP INTO CCP CP/M.

;*****
;  CONSOLE LINKAGE DEFINITIONS - BOOT FROM ADDRESSES  *
;*****

FO06 =          CNS$CK EQU      BOOT+006H ;CHECK CONSOLE INPUT.
FO09 =          CNS$IN EQU      BOOT+009H ;READ CONSOLE INPUT.
FO0C =          CNS$OT EQU      BOOT+00CH ;CHARACTER TO CONSOLE.

;*****
;  READER AND PUNCH DRIVERS - USER SHOULD DEFINED  *
;*****

4AAC 3E1AC9      READER: MVI  A,CNTL$Z!RET ;RETURN END OF FILE.
4AAF C9          PUNCH:  RET             ;NOT IMPLEMENTED.

;*****
;  PRINTER DRIVER AREA - DCM SERIAL PORT LINKAGE  *
;*****

4AB0 79          LIST:   MOV      A,C           ;LIST CHAR TO ACUM.
4AB1 325D4C      STA      BT$CHR           ;STORE LIST CHARACTER.
4AB4 3E01        MVI      A,DC$SIN         ;LOAD SWITCH MEM CMND.
4AB6 D343        OUT      D$PORT          ;ISSUE HARDWARE CMND.
4AB8 3E05        MVI      A,DC$LST         ;DCM LIST COMMAND.
4ABA CD8A4B      CALL     DSK$EX          ;CALL DISK EXECUTE.
4ABD C3444B      JMP      DSK$OK          ;RETURN TO CALLER.

4AC0 3E01        LISTST: MVI      A,DC$SIN   ;LOAD SWITCH MEM CMND.
4AC2 D343        OUT      D$PORT          ;ISSUE HARDWARE CMND.
4AC4 3E06        MVI      A,DC$LCK         ;DCM LIST STAT CMND.
4AC6 CD8A4B      CALL     DSK$EX          ;CALL DISK EXECUTE.
4AC9 CD444B      CALL     DSK$OK          ;SWITCH DD MEM OUT.
4ACC 3A5F4C      LDA      BT$STS          ;LOAD RETURN STATUS.
4ACF C9          RET                     ;RETURN TO CALLER.

;*****
;  HOME - SET TRACK TO ZERO  *
;*****

4AD0 0E00        HOME:   MVI      C,0       ;C REGISTER TO ZERO.
4AD2 C3F44A      JMP      SETTRK          ;PERFORM SET TRACK.

;*****
;  SELECT DISK DRIVE - CHECK FOR LOGON  *
;*****

4AD5 210000      SELDSK: LXI      H,0       ;ERROR RETURN CODE.
4AD8 79          MOV      A,C           ;PUT DRIVE NMBR IN A.

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4AD9 FE02	CPI	N\$DRVS	;CHECK IF LEGAL DRIVE.
4ADB D0	RNC		;NO CARRY IF ILLEGAL.
4ADC 32594C	STA	BT\$DRV	;STORE DRIVE NUMBER.
4ADF 7B	MOV	A,E	;CHECK IF LOG-ON REQ.
4AE0 32644C	STA	LOG\$RQ	;STORE LOGON REGISTER.
4AE3 3A594C	RETDISK: LDA	BT\$DRV	;GET DRIVE NUMBER.
4AE6 6F	MOV	L,A	;L SET DISK NUMBER.
4AE7 2600	MVI	H,0	;ZERO H REGISTER.
4AE9 29	DAD	H	;*2.
4AEA 29	DAD	H	;*4.
4AEB 29	DAD	H	;*8.
4AEC 29	DAD	H	;*16 (SIZE OF HEADER).
4AED 11E94C	LXI	D,D0\$DPH	;DRIVE 0 D\$P\$H.
4AF0 19	DAD	D	;HLSET DRIVE N DPH.
4AF1 C3B54B	JMP	LOG\$ON	;GO CHECK LOG-ON.

\*\*\*\*\*  
; SET TRACK NUMBER \*  
\*\*\*\*\*

4AF4 79	SETTRK: MOV	A,C	;MOVE TRACK NUMBER.
4AF5 325A4C	STA	BT\$TRK	;SAVE TRACK NUMBER.
4AF8 C9	RET		;RETURN TO CALLER.

\*\*\*\*\*  
; SET SECTOR NUMBER \*  
\*\*\*\*\*

4AF9 79	SETSEC: MOV	A,C	;MOVE SECTOR NUMBER.
4AFA 325B4C	STA	BT\$SEC	;SAVE SECTOR NUMBER.
4AFD C9	RET		;RETURN TO CALLER.

\*\*\*\*\*  
; SET MEMORY ADDRESS FOR DISK TRANSFER \*  
\*\*\*\*\*

4AFE 60	SETDMA: MOV	H,B	;HIGH ORDER MOVE.
4AFF 69	MOV	L,C	;LOW ORDER MOVE.
4B00 22604C	SHLD	BT\$DMA	;SAVE TRANSFER ADDRESS.
4B03 C9	RET		;RETURN TO CALLER.

\*\*\*\*\*  
; READ A DISK SECTOR ROUTINE \*  
\*\*\*\*\*

4B04 3E01	DISKRD: MVI	A,DC\$SIN	;SWITCH DD INTO SYSTEM.
4B06 D343	OUT	D\$PORT	;ISSUE DD COMMAND.
4B08 3E01	MVI	A,DC\$RDS	;READ SECTOR COMMAND.
4B0A CD8A4B	CALL	DSK\$EX	;PERFORM OPERATION.
4B0D C24A4B	JNZ	DSK\$ER	;ERROR EXIT.
4B10 2A604C	LHLD	BT\$DMA	;LOAD USER BUF ADDRESS
4B13 EB	XCHG		;MOVE HL TO DE.
4B14 018003	LXI	B,DD\$BUF	;LOAD BUFFER OFFSET.
4B17 2A4000	LHLD	D\$ADDR	;LOAD DD WINDOW ADDR.
4B1A 09	DAD	B	;HL NOW SECTOR BUFFER.
4B1B 018000	LXI	B,SEC\$SZ	;LOAD SECTOR SIZE.
4B1E CD414C	CALL	BLOCK	;BLOCK MOVE ROUTINE.
4B21 C3444B	JMP	DSK\$OK	;NORMAL RETURN.

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; WRITE A DISK SECTOR ROUTINE
; *****

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4B24 3E01    DISKWR: MVI    A,DC$SIN    ;SWITCH DD INTO SYSTEM.
4B26 D343    OUT      D$PORT    ;ISSUE HARDWARE CMND.
4B28 018000  LXI      B,SEC$SZ    ;LOAD SECTOR SIZE.
4B2B 2A4000  LHLD     D$ADDR    ;DD SYSTEM ADDRESS.
4B2E 118003  LXI      D,DD$BUF    ;DD BUFFER OFFSET.
4B31 19      DAD      D        ;HL NOW DD BUF ADDR.
4B32 EB      XCHG          ;DE NOW DD BUF ADDR.
4B33 2A604C  LHLD     BT$DMA    ;HL NOW USER BUF ADDR.
4B36 CD414C  CALL     BLOCK    ;BLOCK MOVE ROUTINE.
4B39 3E02    MVI      A,DC$WRS    ;LOAD WRITE SEC CMND.
4B3B CD8A4B  CALL     DSK$EX    ;CALL DISK EXECUTIVE.
4B3E CA444B  JZ       DSK$OK    ;JUMP IF WRITE OK.
4B41 C34A4B  JMP      DSK$ER    ;ERROR EXIT.

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; *****
; DISK READ/WRITE EXITS
; *****

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4B44 3E00    DSK$OK: MVI    A,DC$SOT    ;SWITCH DD OUT OF SYS.
4B46 D343    OUT      D$PORT    ;ISSUE HARDWARE CMND.
4B48 AF      XRA      A        ;ZERO A REGISTER.
4B49 C9      RET          ;NORMAL EXIT.

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4B4A 3E00    DSK$ER: MVI    A,DC$SOT    ;SWITCH DD OUT OF SYS.
4B4C D343    OUT      D$PORT    ;ISSUE HARDWARE CMND.
4B4E 3EFF    MVI      A,OFFH    ;LOAD ERROR FLAGS.
4B50 C9      RET          ;ERROR EXIT.

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```

; *****
; TRANSLATE SECTOR NUMBER
; *****

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4B51 7A      SECTRN: MOV     A,D        ;TESTING TBL ADDR.
4B52 B3      ORA      E        ;ADDR IN REG DE.
4B53 CA5C4B  JZ       NOTRAN    ;IF ZERO, NO TRANS.
4B56 EB      XCHG          ;(HL) NOW TRANS TBL.
4B57 09      DAD      B        ;(HL) NOW TRANS SECTOR.
4B58 6E      MOV     L,M        ;L IS TRANSLATED SEC.
4B59 2600    MVI      H,0      ;HIGH ORDER BYTE ZERO.
4B5B C9      RET          ;RETURN TO CALLER.
4B5C 210100  NOTRAN: LXI      H,1    ;SET HL TO ONE.
4B5F 09      DAD      B        ;ADD SEC NMBR TO HL.
4B60 C9      RET          ;RETURN TO CALLER.

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; *****
; FORMAT A DISK TRACK ROUTINE
; *****

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4B61 3E01    FORMAT: MVI    A,DC$SIN    ;SWITCH DD INTO SYSTEM.
4B63 D343    OUT      D$PORT    ;ISSUE HARDWARE CMND.
4B65 3E03    MVI      A,DC$MB1    ;SELECT DD BANK 1.
4B67 D343    OUT      D$PORT    ;ISSUE HARDWARE CMND.
4B69 010001  LXI      B,FMT$SZ    ;FORMAT PROG SIZE.
4B6C 2A4000  LHLD     D$ADDR    ;DD SYSTEM ADDRESS.
4B6F 110003  LXI      D,DD$FBUF    ;DD FORMAT BUF OFFSET.
4B72 19      DAD      D        ;HL NOW DD FBUF ADDR.
4B73 EB      XCHG          ;DE NOW DD FBUF ADDR.

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4B74 2A604C      LHLD      BT$DMA      ;FORMAT PROGRAM ADDR.
4B77 CD414C      CALL      BLOCK      ;BLOCK MOVE ROUTINE.
4B7A 3E01        MVI        A,DC$MBO      ;RESELECT DD BANK 0.
4B7C D343        OUT        D$PORT      ;ISSUE TO DD HARDWARE.
4B7E 3E03        MVI        A,DC$FMT      ;LOAD FORMAT TRK CMND.
4B80 CD8A4B      CALL      DSK$EX      ;CALL DISK EXECUTIVE.
4B83 CD444B      CALL      DSK$OK      ;SWITCH DD MEM OUT.
4B86 3A5F4C      LDA        BT$STS      ;LOAD FORMAT STATUS.
4B89 C9          RET                ;FORMAT EXIT.

; *****
; DOUBLE D EXECUTION SUBROUTINE
; *****

;***** ( COMMAND BLOCK TO DOUBLE D AND EXEC )*****

4B8A 32584C      DSK$EX: STA      BT$CMD      ;STORE DCM COMMAND.
4B8D 010700      LXI        B,7          ;NMBR BYTE TO MOVE.
4B90 117003      LXI        D,DD$CBT      ;COMMAND BYTE OFFSET.
4B93 2A4000      LHLD      D$ADDR      ;DD SYS ADDRESS.
4B96 19          DAD        D          ;HL NOW PTS CMND BLK.
4B97 EB          XCHG                ;NOW ADDR IN DE.
4B98 21584C      LXI        H,BT$CMD      ;BIOS CMND BLOCK.
4B9B CD414C      CALL      BLOCK      ;PERFORM BLOCK MOVE.
4B9E 3E02        MVI        A,DC$INT      ;LOAD DD INTERRUPT.
4BA0 D343        OUT        D$PORT      ;ISSUE DD INTERRUPT.

;***** ( WAIT FOR DOUBLE D HALT )*****

4BA2 3A4200      LDA        D$HALT      ;LOAD HALT BIT MASK.
4BA5 47          MOV        B,A          ;MASK IN B REGISTER.
4BA6 DB43      DSK$WT: IN        D$PORT      ;READ DD STATUS.
4BA8 A0          ANA        B          ;TEST HALT* FLAG.
4BA9 C2A64B      JNZ        DSK$WT      ;TEST UNTIL HALTED.

;***** ( GET DOUBLE D STATUS )*****

4BAC 3E01        MVI        A,DC$SIN      ;SWITCH DD INTO SYS.
4BAE D343        OUT        D$PORT      ;ISSUE HARDWARE CMND.
4BB0 EB          XCHG                ;EXCHANGE SRC/DSTN.
4BB1 7E          MOV        A,M          ;STATUS INTO A REG.
4BB2 12          STAX      D          ;STORE STATUS BYTE.
4BB3 A7          ANA        A          ;TEST FOR ERRORS.
4BB4 C9          RET                ;RETURN TO CALLER.

; *****
; LOG-ON - SET DISK PARAMETER BLOCK
; *****

;***** ( CHECK IF LOG-ON REQUESTED )*****

4BB5 3A644C      LOG$ON: LDA      LOG$RQ      ;CHECK LOG REQUEST.
4BB8 E601        ANI        001H      ;LOG ON BIT TEST.
4BBA C2444B      JNZ        DSK$OK      ;RETURN, NO LOG-ON.

;***** ( READ IDENTITY SECTOR )*****

4BBD 22624C      SHLD      DT$PTR      ;STORE DRV TBL PNTR.
4BC0 3E01        MVI        A,DC$SIN      ;SWITCH DD INTO SYS.
4BC2 D343        OUT        D$PORT      ;ISSUE HARDWARE CMND.

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4BC4 3E00          MVI      A,DC$LOG      ;LOAD DCM LOG-ON CMND.
4BC6 CD8A4B        CALL     DSK$EX       ;PERFORM DISK OP.
4BC9 CAD24B        JZ       LOG$CK       ;GO TO LOGON ERROR.
4BCC 210000        LXI      H,0          ;ERROR, BAD LOG ON.
4BCF C34A4B        JMP      DSK$ER       ;BIOS EXIT.
;
;***** ( CHECK FOR JADE ID )*****

4BD2 118003        LOG$CK: LXI      D,DD$BUF      ;DD BUFFER OFFSET.
4BD5 2A4000        LHL D      D$ADDR      ;DD SYS ADDRESS.
4BD8 19            DAD      D              ;HL NOW PNTS BUFFER.
4BD9 11E14C        LXI      D,JADEID      ;DE PNTS BIOS ID.
4BDC 0608          MVI      B,ID$SZ       ;SET LABEL SIZE.
4BDE 1A13          LOG$ID: LDAX     D!      INX D   ;GET LABEL CHARACTER.
4BE0 BE23          CMP      M!      INX H   ;DOES ID SECTOR MATCH.
4BE2 C20F4C        JNZ      LG3740        ;ASSUME DISKETTE 3740.
4BE5 05            DCR      B              ;DECREMENT COUNT.
4BE6 C2DE4B        JNZ      LOG$ID        ;CHECK IF ANOTHER CHR.

;***** ( DISKETTE CONTAINS ID )*****

4BE9 CD2E4C        CALL     TRNONE        ;ASSUME DDENS.
4BEC CD364C        CALL     DPB$AD        ;GET DPB ADDR IN DE.
4BEF 01A003        LXI      B,DD$DPB      ;DPB ADDR OFFSET.
4BF2 2A4000        LHL D      D$ADDR      ;DD SYSTEM ADDRESS.
4BF5 09            DAD      B              ;HL NOW AT ID DPB.
4BF6 010F00        LXI      B,DPB$SZ      ;DPB SIZE IN BYTES.
4BF9 CD414C        CALL     BLOCK         ;MOVE INTO DPB.
4BFC 11B103        LXI      D,DD$DDF      ;ID DTA DNS OFFSET.
4BFF 2A4000        LHL D      D$ADDR      ;DD SYSTEM ADDR.
4C02 19            DAD      D              ;HL POINTS FLAGS.
4C03 7E            MOV      A,M          ;LOAD FLAGS.
4C04 E604          ANI      04H          ;TEST DATA DENSITY.
4C06 CC244C        CZ       TR3740        ;IF 0 USE 3740 TRN.
4C09 2A624C        LHL D      DT$PTR      ;RELOAD POINTER.
4C0C C3444B        JMP      DSK$OK        ;EXIT BIOS JUMP.

;***** ( ASSUME 3740 DISKETTE )*****

4C0F CD244C        LG3740: CALL     TR3740        ;SET SECTOR TRANSLATE.
4C12 CD364C        CALL     DPB$AD        ;SET REGISTER DE.
4C15 010F00        LXI      B,DPB$SZ      ;DPB SIZE IN BYTES.
4C18 217F4C        LXI      H,SD$PBK      ;ADDRESS OF BLK IMAGE.
4C1B CD414C        CALL     BLOCK         ;MOVE INTO DPB.
4C1E 2A624C        LHL D      DT$PTR      ;RELOAD POINTER.
4C21 C3444B        JMP      DSK$OK        ;EXIT BIOS JUMP.

;***** ( SET 3740 SECTOR TRANSLATION )*****

4C24 11654C        TR3740: LXI      D,SDTRAN      ;SECTOR TRAN TBL ADDR.
4C27 2A624C        LHL D      DT$PTR      ;ADDR DISK PARA HDR.
4C2A 73            MOV      M,E          ;LOW ORDER ADDR.
4C2B 23            INX      H              ;POINT NEXT BYTE.
4C2C 72            MOV      M,D          ;HIGH ORDER ADDR.
4C2D C9            RET                    ;RETURN TO LOG USER.

;***** ( SET NO SECTOR TRANSLATION )*****

4C2E AF            TRNONE: XRA      A          ;ZERO A REGISTER.
4C2F 2A624C        LHL D      DT$PTR      ;ADDR OF PARA HDR.

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4C32 77      MOV      M,A          ;ZERO LOW ORDER ADDR.
4C33 23      INX      H            ;NEXT BYTE.
4C34 77      MOV      M,A          ;ZERO HIGH BYTE.
4C35 C9      RET                  ;RETURN TO LOG USER.

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;***** ( GET DRIVE PARA BLK ADDR )*****

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4C36 2A624C  DPB$AD: LHL      DT$PTR      ;ADDR DISK PARA HDER.
4C39 110A00      LXI      D,10          ;DPB TBL PNTR OFFSET.
4C3C 19      DAD      D                ;NOW AT DPB PNTR.
4C3D 5E      MOV      E,M            ;LOW ORDER ADDR.
4C3E 23      INX      H            ;NEXT BYTE.
4C3F 56      MOV      D,M            ;HIGH ORDER ADDR.
4C40 C9      RET                  ;RETURN TO LOG USER.

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;*****
; BLOCK MOVE SUBROUTINE - Z80 LDIR WILL FUNCTION HERE *
;*****

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4C41 7E23  BLOCK:  MOV      A,M!      INX H  ;GET EACH BYTE.
4C43 1213      STAX      D!          INX D  ;STORE EACH BYTE.
4C45 0B78B1     DCX B!    MOV A,B!  ORA C  ;DEC LENGTH (MAX 64K).
4C48 C2414CC9   JNZ      BLOCK!  RET    ;FINISH BLOCK AND RET.

```

```

;*****
; MESSAGE DISPLAY ROUTINE - HL REG POINTS TO STRING *
;*****

```

```

4C4C 7E      MSG$OT: MOV      A,M          ;LOAD CHARACTER/BYTE.
4C4D FE24C8      CPI      EOM!      RZ      ;EXIT IF TERMINATOR.
4C50 4FCD0CF0     MOV C,A!  CALL     CNS$OT ;DISPLAY CHARACTER.
4C54 23C34C4C     INX H!   JMP      MSG$OT ;REPEAT FOR NEXT BYTE.

```

```

;*****
; DOUBLE D - DCM COMMAND BLOCK BUFFER *
;*****

```

```

4C58 00      BT$CMD: DB      0          ;DCM COMMAND.
4C59 00      BT$DRV: DB      0          ;DRIVE NUMBER.
4C5A 00      BT$TRK: DB      0          ;TRACK NUMBER.
4C5B 00      BT$SEC: DB      0          ;SECTOR NUMBER.
4C5C 00      BT$SPO: DB      0          ;SPARE BYTE 0.
4C5D 00      BT$CHR: DB      0          ;LIST CHARACTER.
4C5E 00      BT$MOD: DB      00000000B ;MODE CONTROLS.
4C5F 00      BT$STS: DB      0          ;COMMAND STATUS.

```

```

;*****
; BIOS VARIABLE STORAGE *
;*****

```

```

4C60 0000      BT$DMA: DW      0          ;SYSTEM TRANSFER ADDR.
4C62 0000      DT$PTR: DW      0          ;DRIVE TABLE POINTER.
4C64 00      LOG$RQ: DB      0          ;LOG ON REQUEST REG.

```

```

;*****
; DOUBLE D - MEMORY ASSIGNMENTS (40-4F HEX) *
;*****

```

```

0040 =      D$ADDR EQU      0040H      ;DD SYSTEM WINDOW ADDR POINTER.
0042 =      D$HALT EQU      0042H      ;DD HALT STATUS MASK LOCATION.

```

```

;*****
; 3740 FORMAT PARAMETERS ***** CP/M SINGLE DENSITY *
;*****

```

```

;***** ( SINGLE DENSITY CP/M SECTORING )*****

```

```

4C65 01070D1319SDTRAN: DB      01H,07H,0DH,13H,19H,05H,0BH,11H,17H,03H
4C6F 090F150208      DB      09H,0FH,15H,02H,08H,0EH,14H,1AH,06H,0CH
4C79 1218040A10      DB      12H,18H,04H,0AH,10H,16H

```

```

;***** ( DEFAULT DISK PARAMETER BLOCK )*****

```

```

4C7F 1A00      SD$PBK: DW      26      ;SECTORS PER TRACK.
4C81 03        DB      3      ;BLOCK SHIFT FACTOR.
4C82 07        DB      7      ;BLOCK MASK.
4C83 00        DB      0      ;NULL MASK.
4C84 F200      DW      242     ;DISK SIZE - 1.
4C86 3F00      DW      63     ;DIRECTORY MAX.
4C88 C0        DB      11000000B ;ALLOC 0.
4C89 00        DB      0      ;ALLOC 1.
4C8A 1000      DW      16     ;CHECK SIZE.
4C8C 0200      DW      2      ;TRACK OFFSET.

```

```

;*****
; ZERO PAGE IMAGE - BLOCK MOVED TO BASE PAGE *
;*****

```

```

4C8E C3034A    BS$IMG: JMP      BIOS+03H      ;WARM BOOT VECTOR.
4C91 00        IO$IMG: DB      IOBYTE         ;I/O BYTE IMAGE.
4C92 00        DF$IMG: DB      DF$DRV         ;DEFAULT DRIVE IMG.
4C93 C3063C    JMP      BDOS+06H             ;BDOS CALL VECTOR.

```

```

;*****
; MESSAGES *
;*****

```

```

4C96 0D0A0D0A  MSG$S0: DB      CR,LF,CR,LF
4C9A 4A41444520 DB      'JADE COMPUTER PRODUCTS',CR,LF
4CB2 3230      DB      '0' + CPM$NK / 10,'0' + CPM$NK MOD 10
4CB4 4B2043502F DB      'K CP/M 2.2 DDBIOS2',CR,LF,CR,LF,EOM

```

```

4CCB 0D0A434350MSG$LE: DB      CR,LF,'CCP/BDOS LOAD ERROR',EOM

```

```

000A =      LF      EQU      00AH      ;ASCII LINE FEED.
000D =      CR      EQU      00DH      ;CARRIAGE RETURN.
0024 =      EOM      EQU      '$'      ;END OF STRING.
001A =      CNTL$Z  EQU      01AH      ;CONTROL-Z (EOF).

```

```

;*****
; ID LABEL DEFINITIONS *
;*****

```

```

4CE1 4A61646520JADEID: DB      'JADE DD'      ;ID LABEL.
0008 =      ID$SIZE EQU      $-JADEID      ;LABEL SIZE.

```

```

;*****
; DRIVE PARAMETER HEADER AREA *
;*****

```

```

4CE9 0000      DO$DPH: DW      0          ;SECTOR TRAN TBL.
4CEB 0000              DW      0          ;SCRATCH AREA.
4CED 0000              DW      0          ;SCRATCH AREA.
4CEF 0000              DW      0          ;SCRATCH AREA.
4CF1 004E              DW      DIR$BF      ;DIRECTORY BUFFER.
4CF3 804E              DW      DO$DPB      ;DRIVE PARAM BLK.
4CF5 B04E              DW      DO$CHK      ;DRIVE CHANGE BLK.
4CF7 8F4E              DW      DO$ALL      ;DRIVE ALLOCATION.

                                IF      (1-N$DRVS) SHR 15      ;TEST SIGN BIT.
4CF9 0000000000D1$DPH: DW      0,0,0,0
4D01 004ED04E          DW      DIR$BF,D1$DPB
4D05 004FDF4E          DW      D1$CHK,D1$ALL
                                ENDIF

                                IF      (2-N$DRVS) SHR 15
                                D2$DPH: DW      0,0,0,0
                                DW      DIR$BF,D2$DPB
                                DW      D2$CHK,D2$ALL
                                ENDIF

                                IF      (3-N$DRVS) SHR 15
                                D3$DPH: DW      0,0,0,0
                                DW      DIR$BF,D3$DPB
                                DW      D3$CHK,D3$ALL
                                ENDIF

;*****
; BIOS PROGRAM AREA REMAINING
;*****

4E00 =          BIOS$U EQU      BIOS + K$B      ;BEGIN SCRATCH AREA.
00F7 =          BIOS$F EQU      BIOS$U - $      ;NUMBER OF BYTES FREE.

                                IF      BIOS$F SHR 15      ;TEST PROG OVERFLOW.
                                ERROR EQU      1/0          ;GENERATE ERROR.
                                ENDIF

4D09          F$AREA: DS      BIOS$F          ;USE UP PROG AREA.

;*****
; DIRECTORY BUFFER AREA - BEGINNING OF SCRATCH AREA
;*****

4E00          DIR$BF: DS      SEC$SZ

;*****
; DRIVE TABLE ENTRY - SIZES
;*****

000F =          DPB$SZ EQU      15          ;PARAMETER BLOCK SIZE.
0021 =          ALL$SZ EQU      33          ;ALLOCATION INFO SIZE.
0020 =          CHK$SZ EQU      32          ;CHANGED DISK SCRATCH.

;*****
; DRIVE TABLES - SCRATCH AREAS
;*****

4E80          DO$DPB: DS      DPB$SZ          ;DISK PARAMETER BLOCK.
4E8F          DO$ALL: DS      ALL$SZ          ;DISK ALLOCATION INFO.

```

```

4EB0          D0$CHK: DS      CHK$SZ          ;DISK CHANGED SCRATCH.
              IF      (1-N$DRVS) SHR 15
4ED0          D1$DPB: DS      DPB$SZ          ;DISK PARAMETER BLOCK.
4EDF          D1$ALL: DS      ALL$SZ          ;DISK ALLOCATION INFO.
4F00          D1$CHK: DS      CHK$SZ          ;DISK CHANGED SCRATCH.
              ENDIF

```

```

              IF      (2-N$DRVS) SHR 15
D2$DPB: DS      DPB$SZ          ;DISK PARAMETER BLOCK.
D2$ALL: DS      ALL$SZ          ;DISK ALLOCATION INFO.
D2$CHK: DS      CHK$SZ          ;DISK CHANGED SCRATCH.
              ENDIF

```

```

              IF      (3-N$DRVS) SHR 15
D3$DPB: DS      DPB$SZ          ;DISK PARAMETER BLOCK.
D3$ALL: DS      ALL$SZ          ;DISK ALLOCATION INFO.
D3$CHK: DS      CHK$SZ          ;DISK CHANGED SCRATCH.
              ENDIF

```

```

; *****

```

```

4F20          END

```

```

*
```